AUGUST 30, 2002

AVIATION COORDINATOR HANDBOOK

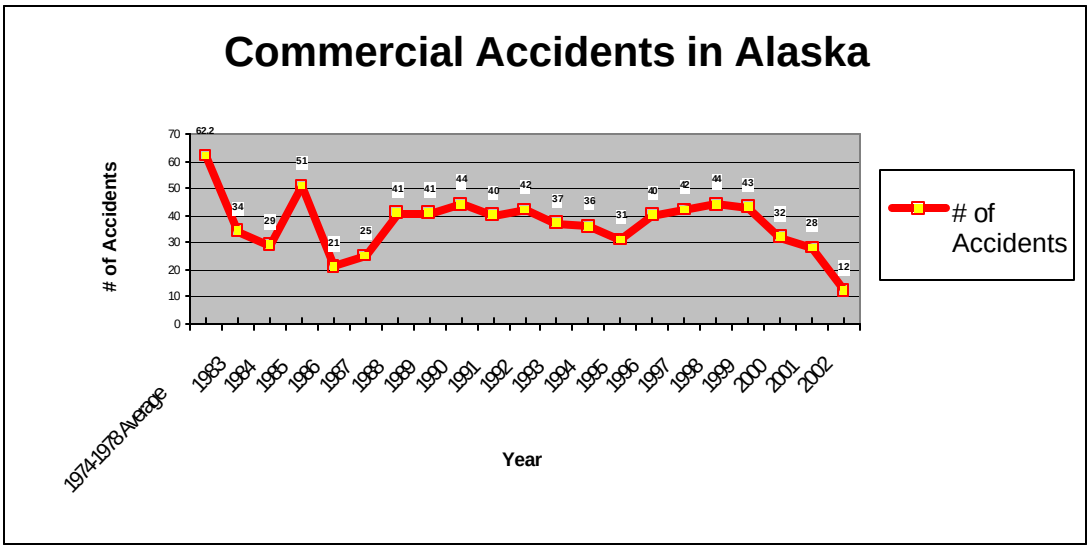
Circle of Safety

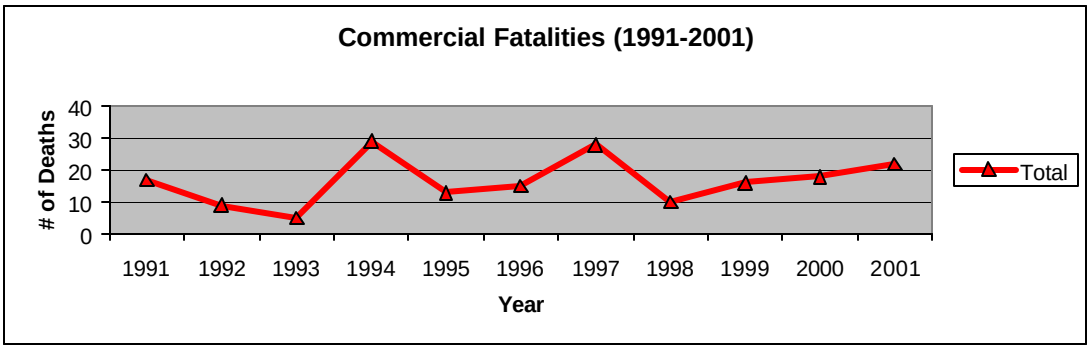
AVIATION COORDINATOR HANDBOOK
TABLE OF CONTENTS

Circle of Safety

AVIATION COORDINATOR HANDBOOK
SECTION 1
INTRODUCTION

It has been said; Alaska is the "Flyingest State in the Union." Alaskans use airplanes the way New Yorkers use the subway to get to school, to the doctor, to work, for leisure and entertainment. About 250 commercial air carriers provide transportation services in Alaska. Every year those carriers have accidents; on average there are 35 commercial aviation accidents each year. These accidents result in loss of property, injury and sometimes loss of life. The first graph below shows that the number of commercial accidents in Alaska has dropped since 1983. However, the number of fatalities, depicted in the second graph, continues to be a concern.





In 1980 the National Transportation Safety Board (NTSB) published a study of aviation in Alaska. That study, which has become a benchmark, pointed to three elements that contributed to aviation accidents. These were pilot attitude, inadequate airfield facilities and weather monitoring and communications systems. Since the NTSB study was made, the Federal Aviation Administration (FAA), the State of Alaska and aviation

industry have taken many steps to address the recommendations to improve commercial travel. More than $1 billion has been spent to construct runways and taxiways, install lights and navigation aids at airports across the state. The National Weather Service and FAA have installed 93 automated weather observation systems to supplement human weather observers. New improvements are made yearly including an FAA owned satellite communications system, aviation weather cameras at 30 airports and mountain passes, instrument landing systems and wind measuring equipment.

Most recently an FAA demonstration program called Capstone (see Appendix B) has placed video displays in commercial aircraft to give pilots a map of the terrain, weather and information about other aircraft in their flight path.

The Alaska Air Carriers Association (AACA) established a separate Foundation, which is defining and adopting operations standards that build on the basic government standards. The Medallion Foundation calls for more training of pilots, additional maintenance and other actions by the carriers.

One area still needs attention that of Alaskans' attitude toward risk. The NTSB identified an attitude of acceptance or risk as one of the main factors contributing to accidents, for example: A pilot makes a flight in marginal weather conditions. He continues the flight until lack of visibility precludes turning around.

The responsibility for safety is shared by the many entities in aviation. Government has set basic standards. Individual pilots and air carriers have responsibility to meet those standards and provide quality service to customers. The FAA views the customer as having rights and responsibilities with regard to safety as well. To inform the flying public of this concept, the agency is introducing a consumer education program called the Circle of Safety that acknowledges the passenger as a partner in the effort to prevent aviation accidents.

As the Aviation Coordinator for your organization, your role is to implement the policy adopted by your company or agency and work with carriers to obtain the level service required. You will be responsible for introducing the concept of passenger rights and responsibilities to your coworkers and other travelers, training them to be alert to safety issues when flying. This handbook provides some tools for doing the job along with a "train the traveler" guide. Additional help is available from the Flight Standards Safety Program Manager in your area. Alaska has made progress in promoting safe air travel and with your help the number of accidents and fatalities will continue to decrease.

SECTION 2
PASSENGER RIGHTS AND RESPONSIBILITIES

As with any service you pay for, you have the right to expect professional service when buying an airline ticket. The FAA believes that regardless of where the flight occurs, you should have the same protections and be guaranteed the same safety standards for operation of the flight.

Consumers today think nothing of returning an item if it does not meet their expectations. If you pay for a service and you are not satisfied, you ask to have the job done correctly. This is the same attitude the FAA believes you should take toward air travel.

Loading luggage into a Cessna 207. Photo credit: Ellen Paneok

PASSENGER'S RIGHTS

1. You have the right to a thorough preflight briefing which covers:
    a. The location of the Emergency Locator Transmitter (ELT) and survival equipment.
    b. Emergency exit locations and operation of emergency exits.
    c. Operation of the seatbelts.
    d. Location and use of the fire extinguisher.
    e. Prohibition of smoking.
    f. Use of oxygen (if required).
    g. Use of flotation devices.

2. A passenger has the right to ask the pilot certain questions such as:
    a. Will this flight be done visually or on instruments? (See Section 5-Weather)
    b. Have you calculated the weight and balance of the cargo?

c. Has the pilot obtained a weather forecast for the intended flight?
d. Is the airplane equipped properly?
e. Are you licensed, rated and current for this flight?
f. Have you made a flight plan and filed it with your company or the FAA?

QUESTIONING AUTHORITY

Asking questions of an authority figure such as a pilot does not come naturally to most people. The Circle of Safety concept that says passengers have some responsibility for minimizing their exposure to risk and requires that they overcome ingrained habits. It challenges passengers to be willing to take up time, appear stupid or even risk being the target of belligerence in order to determine that conditions are appropriate for a flight. The idea of such a situation can be intimidating to most people and in small communities where the pilot may be a longtime friend it is even less likely that a passenger will want to challenge the pilot's judgment.

There are ways to ask these questions that are not threatening to a pilot and which demonstrate that passengers are interested in the safety of everyone on board a flight. Pilots are required by regulation to carry their FAA certificate when operating an aircraft. The aircraft must have certification and registration documents on board. The "Train the Traveler Guide" offers role-playing exercises to help students overcome the awkwardness about such questions.

PASSENGER'S RESPONSIBILITIES

You have the responsibility to be proactive about safety through your own actions.

a. Pay attention to the pilot during the passenger briefing.
b. Tell the pilot that you can fly at another time if the weather is questionable. You should NOT ask the pilot to fly into unsafe weather.
c. Accept the air carrier's decision to delay or cancel a flight due to weather.
d. Do not ask the pilot to overload the airplane.
e. Be alert to pilot fatigue. Be aware that the pilot has flight and duty time limitations. The pilot may have already flown many flights.
f. Dress properly for a flight according to the weather, in case of an unplanned landing. (See Appendix C, Survival Information)
g. Do not ask the pilot to fly below 500 feet.
h. Do not ask the pilot to land at an airstrip that is less than the length required by the aircraft.
i. Remember that pilots are human and can make mistakes; if you have a question about the flight, ask it.

Offloading a Cessna 207. Photo: Ellen Paneok

SURVIVAL AWARENESS

You should be aware that you are traveling in a potentially harsh environment. Although an air carrier may provide minimal survival gear, when traveling in rural Alaska carry basic survival items on your person. This may be the only survival equipment available in the event of an unplanned landing. Survival information is provided in Appendix C.

PASSENGER RIGHTS AND RESPONSIBILITIES
The *"Circle of Safety"* includes YOU, the passenger

For your own safety

DO:

- **Keep your seatbelt/shoulder harness BUCKLED at all times.**
- **Listen to and follow the pilot's briefing and instructions.**
- **Dress properly. Wear warm clothing as appropriate.**
- **Give your flight route, destination and timeline to a reliable family member or friend.**
- **Follow the pilot's instructions in the event of an emergency.**
- **READ the passenger briefing card.**
- **Make mental note of the emergency exit locations and make sure you know how to open them.**
- **Know where the fire extinguishers, Emergency Locator Transmitters (ELTs), first aid kits and other survival equipment are located.**
- **Ask the Pilot questions if you are uncomfortable about the weather, aircraft conditions, etc.**
- **Question the pilot if the aircraft looks overloaded or unsafe.**

Don't:

- **Pressure the pilot to fly when he/she says the weather is too bad, NO reason is worth risking your life or the life of others.**
- **Pressure the pilot to carry a payload beyond the weight and balance limitations of the aircraft.**
- **Distract or disturb the pilot during critical times such as take-off and landing.**

SECTION 3
POLICY

Travel by aircraft is frequent and essential in rural Alaska. Organizations that purchase aviation services should have written policies regarding the use of such services. The FAA believes that by adopting a policy and setting procedures, your organization can reduce the risk of accidents and exercise consistent control over certain aspects of air travel.

A policy sets standards and provides guidelines for decisions. It eliminates some of the decision-making pressure that comes with choosing an air carrier by making it objective rather than the determination of one person at one time and another person at another.

A sample policy might look like the following:

> *This policy contains basic information on policy, planning and incident reporting procedures for XYZ COMPANY in Alaska. Please keep it readily available for reference.*
>
> *All flights will be scheduled through the Aviation Coordinator. The Coordinator may authorize other offices (schools) within the organization to schedule directly with local vendors, but it remains their responsibility to ensure safe flights for company travelers. (All travelers must have training from the Traveler Training Handbook prior to traveling).*
>
> *"Flight following" is a safety and operational requirement of FAA licensed air carriers. Two flight following methods are used. One uses flight plans filed through the FAA. The other is the use of "company flight plans" which are filed with a company official.*
>
> *The Aviation Coordinator will assign a "Flight Manager" for all passengers (example: chaperone for group of students). The Coordinator will identify an individual prior to the flight to perform these duties as follows, assuring that:*
>
> - *The aircraft and pilot are properly licensed.*
> - *The pilot has filed a flight plan.*
> - *The pilot performs the preflight briefing.*
> - *Single engine aircraft will not be flown under Instrument Flight Rules (IFR) conditions.*
> - *Passengers will not handle the flight controls.*
> - *Passengers do not pressure air carriers or pilots into unsafe flying.*
> - *Reports are filed on all incidents.*
>
> *All aircraft accidents, incidents or aviation hazards that occur during any XYZ COMPANY flights must be reported as soon as possible to the Aviation Coordinator. All events must be reported on the Safety Report Form (Section 8) and given to the Aviation Coordinator, who will decide what action to be taken.*
>
> *It is important to emphasize that every XYZ COMPANY employee has the right to refuse any flight he or she considers to be unsafe.*

See actual policy examples at the end of this handbook.

Circle of Safety
SECTION 4
AVIATION COORDINATOR DUTIES

As the Aviation Coordinator it is your responsibility to implement the policy of the organization and help ensure safe transportation for your travelers. This handbook will help you provide coordination and consistent risk management for personnel using air travel. You can also designate personnel (if required) to instruct travelers with the ***Circle of Safety*** concept prior to traveling in rural Alaska. Your specific duties are as follows:

- Select an air carrier using the ***Circle of Safety*** air carrier selection process (see Section 7).
- Formalize proper procedure for use of air carriers by all travelers (see Section 2).
- Promote aviation safety education and training required for travelers by using this handbook.
- Promote aviation safety education and training required for travelers by using the Traveler Training Handbook.
- Report aviation safety issues to the Flight Standards District Office in your area when warranted (see Section 8). Addresses and phone numbers listed below.

The following Flight Standards District Offices are available to assist you in your area:

Safety Program Managers contact points:

Anchorage Flight Standards District Office	
4510 West International Airport Road	1-800-294-5116
Anchorage, Alaska 99502	271-2000
Fairbanks Flight Standards District Office	
6450 Airport Way, Suite 2	1-800-294-5119
Fairbanks, Alaska 99709	457-9231
Juneau Flight Standards District Office	
3032 Vintage Park Blvd. Suite 106	1-800-478-2231
Juneau, Alaska 99801	586-7532
Aviation Accidents and Complaints toll-free number	1-800-478-7233

SECTION 5
HUMAN FACTORS

INTRODUCTION

No one ever intends to have an accident. Many accidents result from poor judgment. For example: A pilot flying several trips throughout the day grows steadily behind schedule due to late arriving passengers or other delays. The last flight of the day, the weather starts to deteriorate, but he thinks to himself that he can squeeze in one more short flight. It's only ten minutes to the next stop. But by the time the cargo is loaded and the flight begun he cannot see the horizon as he flies out over the tundra. He decides he needs to forge on since he told the village agent he was coming and flies into poor visibility. Searchers find the aircraft crashed on the tundra.

Photo: National Oceanic and Atmospheric Administration (NOAA)

HUMAN FACTORS IN ACCIDENTS

In the scenario above, a chain of events results in the pilot making a poor decision. The pilot exerts pressure on himself to complete the flight. The pilot proceeds into weather conditions that do not allow a change in course and in many such cases the aircraft is flown into the ground.

PRESSURE TO FLY- THE PASSENGER

When you are traveling you want to get where you are going. It's human nature. You have commitments; need to make airline connections; or you just want to get back home. These concerns may cause you to ask the pilot to fly when she is uncertain about weather conditions and how quickly they are changing, take more freight than is allowable, or expect her to fly when fatigued. Passengers aware of human factors such as fatigue can be proactive in reducing the pressure to fly.

PRESSURE TO FLY- THE PILOT

Pilots place demands on themselves to "get the job done", please passengers and complete the flight. A pilot hoping to avoid a second flight might be tempted to add more cargo than the aircraft can safely handle. When passengers shop around for an air carrier that will take them in questionable weather, they exert economic pressure on a pilot or carrier, prompting them to try rather than lose a fare. Pilots also feel peer pressure to fly when their colleagues are flying.

SECTION 6
WEATHER- WHEN CAN YOU FLY?

INTRODUCTION

Weather can affect travel, especially when the airplane is the only source of transportation in rural Alaska. The FAA has regulations concerning minimum weather requirements, aircraft limitations and pilot training.

In Alaska the fleet of commercial aircraft consists of about 500 planes of various kinds. Single engine aircraft such as Cessna 207s and twin engine Piper Navajos are among the workhorses of Bush aviation. The type of aircraft used depends upon the distance to be flown, the length and condition of the airfield and other terrain conditions.

Multi-engine aircraft like the Navajo are designed to carry larger loads; more people and they are normally used for longer flights. Multi-engine aircraft are equipped with instrumentation and navigational equipment that allows the pilot to fly in Instrument Flight Rules (IFR) conditions (see Appendix B). These help the pilot when flying in clouds, rain or snow.

Most single engine airplanes cannot be flown unless the weather is suitable for Visual Flight Rules (VFR) conditions (see Appendix B). The FAA has approved certain single engine aircraft to fly IFR such as the Cessna Caravan, however these aircraft require additional equipment for that certification. When flying VFR the pilot must be able to see the ground to navigate and avoid obstacles and other aircraft. Single engine aircraft are generally used for short distance flights and smaller airstrips. They are also used for carrying lighter loads where it would be inefficient to use the larger multi-engine aircraft.

FAA weather camera photos. Right photo shows clear day image of Anaktuvuk Pass. The image on left shows poor weather.

FLIGHT VISIBILITY

When single engine airplanes are used for air carrier flights pilots must have 2 miles forward visibility if the cloud ceiling is less than 1000 feet (Federal Regulation Part 135.205 VFR: Visibility requirements). However, the minimum altitude a pilot can fly is 500 feet above the ground (Federal Regulation Part 135.203 VFR: Minimum altitudes). For example, if a person is at an airport with a 3000-foot runway, she must be able to see roughly three times the length of that runway. That would be the basic minimum visibility. For more in-depth visibility information please see Appendix B.

OTHER WEATHER CONSIDERATONS

Frost and Ice

Frost and ice on an aircraft pose dangers. Ice affects the shape of the airplane's wing; which disrupts the airflow. Ice adds weight to the aircraft. Even a little bit of ice can make a difference in the airflow over the wings. If you see ice on an airplane and you are in doubt about how it will affect the flight, ask the pilot.

Aircraft covered with snow and ice. Photo: Ellen Paneok

Extreme Cold

Most air carriers have temperature limitations for their operations, based on recommendations by aircraft manufacturers. Each manufacturer recommends minimum temperatures for operation by type of engine. Typically a piston engine can only be operated at minus 35 degrees or warmer. A turbine engine has a wider range of capability and can be operated in temperatures as low as minus 60 degrees. Your organization may wish to establish warmer minimum temperatures for traveling.

Wind and Waves

Much travel in rural Alaska involves the use of seaplanes. A pilot must be able to make a judgment about how the wind, waves and current will affect takeoff and landing. The pilot must also observe objects in the water and avoid them.

IMPORTANT

You have the right to a safe flight. If you have concerns about the weather, discuss the issue with the pilot before departure. **Ask questions.**

SECTION 7
AIR CARRIER SELECTION

This section is intended to guide the procurement of services from air carriers that are willing to meet the requirements established by your agency or organization. In order to be certificated by the FAA, an air carrier must meet the basic standards of the Federal Aviation Regulations (FARs). There are air carriers that have committed to establishing even higher levels of training and operation. These carriers will participate in the Medallion Program that is being developed (see Appendix B). Once they meet the standards, they will be awarded a Medallion seal to use in advertising their services.

In Alaska, some businesses have policies requiring employees to fly only in turbine engine aircraft when on company business. They also require all aircraft to be equipped with navigational instruments and pilots to be instrument rated. Your organization has the right to set such standards. A school district, for example, may choose to have students fly only in twin-engine aircraft. The choice of carrier to fly with may vary from a "single pilot" operation, one pilot who operates one aircraft, to larger commercial carriers that use several types of aircraft depending on the type of flight. Once the organization has set requirements, use a questionnaire such as the one provided on page 12 to identify air carriers that meet those requirements.

SAMPLE AIR CARRIER QUESTIONNAIRE

Air Carrier Questionnaire
Each year, Aviation Coordinators throughout Alaska are responsible for coordinating safe air travel for thousands of employee passengers. So that we may evaluate your company's ability to meet our safety needs, please provide the following information:

Air Carrier Certificate number: _____

Check the types of operations authorized by your Operations Specifications:

__Single-Engine VFR
__Single-Engine IFR
__Multi-Engine VFR
__Multi-Engine IFR

Insurance provider(s) and insurance coverage per seat _____

Briefly describe any accidents or incidents that your company has been involved in within the past 3 years. Include information on company actions taken to prevent the same or similar situations from occurring in the future. Be advised our organization will routinely check responses against accident databases.

_____
_____
_____
_____
_____

What special training or flight checking do pilots and flight followers/dispatchers receive regarding inadvertent entry into IFR conditions while on a VFR flight? How often do they receive this training?

_____
_____
_____
_____
_____

Our organization has established the following requirements.

- Minimum flight visibility _____
- Minimum temperature cutoff _____
- Minimum pilot training and local experience requirements
- Minimum situational awareness equipment (e.g. Capstone (see Appendix B), graphical display Global Positioning System (GPS) units, Ground Proximity Warning Systems (GPWS) units, etc.

Can your company meet these requirements?

___Yes ____No

List other things we should take into consideration when reviewing your application (e.g. pilot training above the minimum regulatory standards, maintenance training, special navigational equipment found in your aircraft, local pilot experience, accident free history, special survival equipment, the AACA's Medallion program (see Appendix B) etc.)

_____
_____
_____
_____
_____

Comments:

_____
_____
_____
_____
_____
_____
_____
_____

SAMPLE AIR CARRIER QUESTIONNAIRE

Air Carrier Questionnaire
Each year, Aviation Coordinators throughout Alaska are responsible for coordinating safe air travel for thousands of employees. This "request for information" package is provided to carriers that wish to serve the organization's air transportation needs. So that we may evaluate your ability to meet our needs, please provide the following information:

Air Carrier Certificate number: *ABCDEFGHIJK* **(This shows the carrier is FAA certificated.)**

Check the types of operations authorized by your Operations Specifications:
(Operations Specifications comprise a contractual agreement between the carrier and the FAA defining what aircraft and flight operations are specified for that carrier.)
__Single-Engine VFR
__Single-Engine IFR
__Multi-Engine VFR
X Multi-Engine IFR

Insurance provider(s) and insurance coverage per seat *ACME INSURANCE*
(The State of Alaska minimum requirement for insurance is 150K per seat. Your organization may have its own insurance limitations.)

Briefly describe any accidents or incidents that your company has been involved in within the past 3 years. Include information on what your company has done to prevent the same or similar situations from occurring in the future. Be advised that our organization will routinely check responses against accident databases. **(This information will help your organization in choosing a safe carrier.)**

_____
_____
_____
_____
_____

What special training or flight checking do pilots and flight followers/dispatchers receive regarding inadvertent entry into IFR conditions while on a VFR flight? How often do they receive this training?

_____
_____
_____
_____
_____

Our organization has established the following requirements.
- Minimum flight visibility: **(Example: 3 miles)**
- Minimum temperature cutoff: **Example: -30 degrees)**
- Pilot local experience requirements: **(Six months in the area)**

- Minimum situational awareness equipment (e.g. Capstone (see Appendix B), graphical display Global Positioning System (GPS) units, Ground Proximity Warning Systems (GPWS) units, etc.

Can your company meet these requirements?

___Yes ____No

List other things we should take into consideration when reviewing your application (e.g. pilot training above the minimum FAA regulatory standards, maintenance training, local pilot experience, special survival equipment, the FAA Medallion program etc.) **(Any training or equipment that is above the basic minimum requirements gives an extra safety factor when considering a carrier.)**

_____
_____
_____
_____
_____

Comments: *PILOTS WHO OBTAIN 100 HOURS OF ALASKA TIME MAY EARN_____ MORE POINTS FOR A CARRIER IF THEY ARE PARTICIPATING IN THE MEDALLION PROGRAM.*_____
_____
_____
_____
_____
_____
_____
_____

This section can be tailored for use by area organizations and agencies.

SECTION 8
SAFETY REPORT PROCEDURES

REPORTING SAFETY ISSUES

If things appear to be unsafe during a flight, travelers are encouraged to ask the pilot about what they observe. Safety concerns should be reported to the Aviation Coordinator as soon as possible and preferably before the flight occurs. Some examples of a safety issue may be a near accident on landing, obviously poor visibility on a VFR (Visual Flight Rules) flight, an obviously overloaded aircraft; oil leaking out of an engine or a low tire. The report is a tool to assure that the carrier meets or exceeds the organization's standards for passenger travel. A sample filled-in report is provided on page 18 of this section.

The following Flight Standards District Offices are available to assist you in your area:

Safety Program Managers contact points:

Anchorage Flight Standards District Office	
4510 West International Airport Road	1-800-294-5116
Anchorage, Alaska 99502	271-2000
Fairbanks Flight Standards District Office	
6450 Airport Way, Suite 2	1-800-294-5119
Fairbanks, Alaska 99709	457-9231
Juneau Flight Standards District Office	
3032 Vintage Park Blvd. Suite 106	1-800-478-2231
Juneau, Alaska 99801	586-7532
Aviation Accidents and Complaints toll-free number	1-800-478-7233

Circle of Safety

Safety Report

SECTION A

Date of event: _____

Time of event: _____

Location of event: _____

Air Carrier Involved: _____

Description of the Event:

_____
_____
_____
_____

_____

Signature of Person Reporting Event Date Contact Phone Number

---

SECTION B

Corrective Action Taken:

_____
_____
_____
_____

_____

Signature of Aviation Coordinator Date Contact Phone Number

Circle of Safety
Safety Report
Sample
SECTION A

Date of event: *DAY/MONTH/YEAR*

Time of event: *10:00 AM*

Location of event: *ACME AIRPORT, ACME VILLAGE*

Air Carrier Involved: *FLYAWAY AIRLINES*

Description of the Event:
MY STUDENTS AND I WERE ON A FLIGHT BETWEEN HOMETOWN AND ACME. WE WERE CLOSE TO THE AIRPORT AT ACME WHEN THE ENGINE DIED. THE PILOT PRESSED A BUNCH OF LEVERS AND SWITCHES, AND THEN THE ENGINE CAME BACK ON. I THOUGHT WE HAD A REAL BAD PROBLEM AND WHEN WE LANDED I ASKED THE PILOT ABOUT IT. HE JUST SAID THAT HE RAN ONE GAS TANK DRY AND THAT IT WAS NO BIG DEAL. MY KIDS AND I WERE REAL SCARED.

MRS.CHAPERONE	*MONTH/DAY/YEAR*	*123-456-7890*
Signature of Person Reporting Event	Date	Contact Phone Number

---

SECTION B

Corrective Action Taken:
I CONTACTED THE FLIGHT STANDARDS OFFICE TO SEE IF ANY OTHER ACTION SHOULD BE TAKEN. **(As a Coordinator you can ask an FAA inspector if there are any safety issues involved. The inspector may or may not ask you to issue a statement. If there is a safety issue the inspector will investigate it.)**

JOHN DOE	*MONTH/DAY/YEAR*	*098-765-4321*
Signature of Aviation Coordinator	Date	Contact Phone Number

APPENDICES

APPENDIX A

Web site Addresses

www.alaska.faa.gov
This Alaskan Region Web site contains information for pilots and the general public. It contains information such as weather, safety information and flight tips for pilots. It also contains links to the Flight Standards District Offices and agencies within the State of Alaska.

www.faa.gov
This Web site contains descriptions of all FAA divisions, traveler safety and aviation education information, as well as the latest aviation news.

www.akweathercams.faa.gov
This Web site provides actual video pictures from FAA weather camera locations. In most cases these are locations where weather observations do not exist. It provides real-time images for pilots that are updated as often as every 10 minutes. The cameras are aimed to give the best indicator of weather most relevant to airplane traffic.

www.faa.gov/education/index.htm
This FAA sponsored Web site contains aviation career information, a teacher's corner and information on grants and scholarships.

www.ntsb.gov
This Web site provides information about the National Transportation Safety Board, accident information and statistics. These databases can be accessed by air carriers and the public for specific accident data.

APPENDIX B
GLOSSARY

VISUAL FLIGHT RULES

These are rules of flight for aircraft under visual meteorological conditions in which the pilot uses visual observations to meet his responsibility to see and avoid other aircraft and terrain.

Photo: NOAA

INSTRUMENT FLIGHT RULES

These are rules governing the procedures for conducting instrument flight. The only single-engine aircraft certified for flying under these rules is the Cessna Caravan.

GROUND VISIBILITY

Weather Observations

Ground visibility can be defined as the prevailing horizontal visibility near the Earth's surface as reported by an accredited observer. Ground visibility is measured at some airports by the National Weather Service, a Flight Service Specialist or by a trained weather observer. However, many of Alaska's airports do not have human weather observers. Pilots may have to use automated weather system reports or the reports of other pilots who have recently traveled through an area. Some air carriers contact village residents for an estimate of visibility. Those observations are only suitable for VFR flights.

Ground blizzard. Photo: NOAA

Measured Distance

The best way to determine visibility for takeoff is to measure the distance of prominent landmarks. As an example, on the Alaska Aviation Weather Camera System the FAA has begun annotating physical features around the airport or mountain pass on the clear day image. Pilots can compare that image with a real-time photo and the features that are visible will give the pilot some idea of the visibility distance and cloud cover.

With the use of local knowledge, certain landmarks around communities could also be measured and used for determining ground visibility. Outbuildings, rivers, hills and other obvious landmarks can be used. Many airports are a distance away from the village. For instance, if the airport is one mile away from the village, that could be used to estimate the visibility. For another example, an average runway measures 3000 feet long, a person would have to see three times the distance of the runway to have a mile visibility.

FLIGHT VISIBILITY

Flight visibility is defined as the average forward horizontal distance that a prominent unlighted object can be seen and identified by day from the cockpit of an aircraft in flight. Pilots must have at least 2 miles visibility if the cloud ceiling is less than 1000 feet, however, the minimum altitude pilots can fly is 500 feet.

Methods of determining visibility range from using time and distance calculations to the use of electronic equipment like Global Positioning Systems (GPSs).

Time and Distance Calculations

Pilots learn early in their flight training how to use time, distance and speed calculations. For determining flight visibility, a pilot selects a prominent object at the farthest distance visible. Then he notes the indicated air speed. He notes the time in seconds it takes to reach that object. In a rule of thumb, if the airplane is flying at 120 miles per hour, it will take 1 minute to go 2 miles.

Global Positioning System (GPS) Calculations

Pilots can set their GPS to display miles that remain to the next "waypoint". Then they look for the farthest prominent object and note the mileage displayed on the GPS. When directly overhead the object they note the mileage displayed and subtract the previously noted miles. The sum will be the distance of flight visibility.

THE CAPSTONE PROGRAM

The Capstone Program is a joint industry and FAA effort to improve aviation safety and efficiency by putting cost effective, new technology avionics equipment into aircraft and providing the supporting ground infrastructure. The demonstration areas are non-radar environments where most of the air carrier operations have been limited to Visual Flight Rules. The FAA is equipping aircraft used by commercial operators in the area with a Global Positioning System (GPS) based avionics package. In addition to the avionics suites Capstone is deploying equipment for weather observation, data-link communications, surveillance, and Flight Information Services (FIS). The FAA has also increased the number of airports served by an instrument approach and now enables radar-like IFR air traffic control services. Highlights:

1. The Capstone Program provides weather reports directly to the pilot in the cockpit.
2. Installation of new automated weather systems enables commercial operators to perform GPS instrument approaches at airports in the Yukon-Kuskokwim area.
3. GPS instrument approach procedures have been completed and published for 10 additional remote village airports within the Yukon-Kuskokwim area.
4. Introduction of a new data link network allowing participating pilots to see aircraft traffic via a cockpit display to aid in collision avoidance.
5. An interface with the existing radar tracking system provides radar-like services in participating aircraft in the Yukon-Kuskokwim delta region.

MEDALLION FOUNDATION

The Alaskan Air Carriers Association established the Medallion Foundation to improve rural aviation safety in Alaska beyond the regulatory environment. The overall objective of this voluntary program will be to change the aviation safety culture in Alaska. The specific goals are to reduce commercial aviation accidents in Alaska by at least 50%, increase the reliability of air transportation in rural Alaska and reduce the insurance rates for the Alaska aviation industry. The following areas will be addressed:

1. Written safety programs will have an added accident response system with safety officers and a reporting system that allows anonymity.
2. Flight simulator training; which includes instrument flying techniques to enhance the skills of all pilots who may encounter poor weather when flying VFR.
3. The emphasis will be on operational control where the flight dispatcher and the pilot will work together in analyzing all safety aspects of any given flight.
4. Emphasis on establishing minimum training and staffing for maintenance personnel and a standardized training program for ground service personnel.
5. Internal audit programs that can establish the existence of a problem/hazard, and can also resolve the issue. It can be determined if the fix is actually working. The use of systems safety tools and root cause analysis will be emphasized.

COMMONLY USED ACRONYMS

The following is a list of commonly used acronyms by the aviation industry:

CFIT: Controlled Flight Into Terrain
ELT: Emergency Locator Transmitter
FAA: Federal Aviation Administration
FAR: Federal Aviation Regulation
FSDO: Flight Standards District Office
GPS: Global Positioning System
GPWS: Ground Proximity Warning System
IFR: Instrument Flight Rules
NTSB: National Transportation Safety Board
NWS: National Weather Service
ROC: Regional Operations Center
SPM: Safety Program Manager
VFR: Visual Flight Rules

APPENDIX C
SURVIVAL INFORMATION

Alaska State law requires that no pilot may make a flight in Alaska without carrying emergency equipment. This equipment includes:

- Food for each person in the aircraft sufficient to maintain life for two weeks
- One hatchet or ax
- One first aid kit
- One knife
- Two small boxes of matches
- One mosquito headnet for each person
- Two small signaling devices, such as colored smoke bombs, signal mirrors, railroad flares, or "Very" pistol shells stored in sealed metal containers

In addition of the above, the following items are required for winter travel, October through April:

- One pair snowshoes
- One sleeping bag
- One woolen blanket for each person

Although an air carrier may provide minimal survival gear when traveling in rural Alaska many people choose to wear a survival kit on their person. This can be accomplished by wearing a "fanny pack" or a fishing vest with multiple pockets in which to place survival items. This personal kit should cover the necessary basics such as fire starting materials, shelter, water procurement, signaling devices and medical items. Many people pack the following in their personal kits:

- Waterproof matches
- Candle
- Space blanket (shelter, windbreak, ground cover, cape)
- Small mirror (for signaling airplanes)
- Compass
- Hard candy or bullion cubes
- Combined fishing and sewing kit
- Ball of string
- Whistle (for signaling)
- Insect repellent

The above may be the only survival equipment available in the event of an unplanned landing. This will ensure that the barest minimums for survival will be met if a rapid egress from the aircraft is necessary, and its survival kit cannot be retrieved.

At any one time one can be put at the mercy of Mother Nature relying solely on instinct, experience, and the will to survive. Those who give up do not survive. Victims need good coping mechanisms and a positive attitude. In a forced landing situation victims do not get to select their survival environment, terrain or climate. One must learn to adapt, be flexible and above all be prepared.

APPENDIX D

ACTUAL POLICIES

GALENA CITY SCHOOLS

Extracurricular Activities

Handbook

TABLE OF CONTENTS

Eligibility Requirements

To be eligible during a school quarter for participation in interscholastic activities, a student must:

1. Be properly registered in a 9-12 school program or any combination thereof, in the school where the student will participate.

2. Be carrying a minimum of four classes that lead to granting credit towards graduation.

3. Be in regular attendance at school classes in which enrolled. *If a student has five unexcused absences in any class, he or she will be ineligible until the following quarter.*

4. All of the above rules apply to Jr. High programs if available.

Quarter Credit Rule

In order to be eligible to participate in extracurricular activities a student must have maintained a C average during each quarter. If a student falls below a C average or has received a D or F for a quarter grade, he or she will be ineligible to participate in extracurricular activities for the following quarter. *If ineligibility occurs due to grade point average in the fourth quarter, the student will be ineligible for the first quarter the following year.*

A grade of 'incomplete' is considered as not passing until the 'incomplete' is changed on the official school record. The face value of grades will be used and a "+" or "-" after a letter grade will be disregarded.

Weekly eligibility shall be established by calculating a student's cumulative quarter grade on Friday of each week. If a student has a grade point average below 2.0, he or she will not be eligible for that week.

General Policies

Drug and Alcohol Policy

1. Galena City Schools has the legal right to test its students for the use of alcohol or drugs, including the rapid eye test, Breathalyzer test, and urine analysis. A staff member based on good cause can request any of these three procedures. No random testing will be conducted.

2. The refusal by any student to submit to testing for drugs and alcohol use will be considered an admission of such use, with disciplinary procedures to follow based upon such assumed use.

3. The distribution of alcohol or illegal drugs includes provisions of such substances to other students under any circumstances, on or off campus, including sale, gift, or exchange for other considerations.

In order to be eligible to participate in extracurricular activities during any quarter, a student must be alcohol and drug free. If a district employee determines that a student

has possessed or used alcohol or illegal drugs during the school year, that student will be suspended from participation in extracurricular activities for 45 school days. The student will have to meet with the site advisor or district counselor and principal, attend school regularly, and is not eligible for games or travel during this time. On the second violation the student would be suspended for one semester from the date of the infraction. Students who use tobacco products (cigarettes, cigars, snuff, chew, wt.) in school buildings, on school property, or while participating in school-sponsored activities shall be prohibited.

Medical Examination

A student may not be permitted to participate in a practice session or to represent his or her school in athletics, cheerleading, or other strenuous activities until there is a medical examination on file annually.

Coach's Responsibilities

1. Have all rules on file with the Athletic Director prior to the start of the season. Coaches may establish additional training rules for each sport.

2. Must hold a parent/student meeting before the start of the season. A student will not be allowed to participate until a meeting of coaches and parent is held. Coaches must explain all Galena City School District and ASAA rules, as well as criteria for play, lettering, and travel.

3. Select and coach individual participants in the skills necessary for excellent achievement in the sport.

4. Plan and schedule a regular program of practice in-season with other coaches. There are no practices on Thanksgiving Day, Christmas Day, New Years Day, and Sundays unless approved by the Athletic Director.

5. Work closely with the Athletic Director in scheduling interscholastic contests. The Athletic Director, prior to scheduling, must approve all events and camps.

6. Help at all home events; assist J.V. and other coaches.

7. Maintain and recommend the purchase of equipment, supplies, and uniforms. Maintain and clean all uniforms (dry-clean only if required to) after each activity and before turning in for inventory.

8. Maintain the necessary physical forms, insurance eligibility forms, and records as required by ASAA and Galena City Schools.

9. Oversee the safety conditions of the facility or the area in which the assigned sport is conducted at all times students are present.

10. Establish performance criteria for participation in interscholastic competition in the sport.

11. Enforce discipline and sportsmanlike behavior at all times. Establish penalties for breach of such standards by individual students.

12. Maintain personal/professional conduct and dress standards commensurate with the ideals of the Galena City School District's interscholastic activity program.

13. Be familiar with all pertinent rules, regulations, policies, and procedures of ASAA, the regional affiliate, and Galena City School District.

14. Perform other duties pertinent to the sport as assigned by the Athletic Director.

15. Ensure that chaperones accompany both male and female students for all school-sponsored, overnight activities, and ensure appropriate behavior occurs.

16. Agree to the use of the High School Coach's Evaluation form. This form is for optional use by the administrator, athletic directors, and/or the activity sponsor for the purpose of improvement only.

17. Be currently certified in first aid as required by ASAA regulation, and have a fully equipped first aid kit on hand. By the year 2001 all coaches must have an NFICEP Coach's Certification.

18. Possess and be familiar with the National Federation Handbook for his/her sport.

19. Develop sport manager job descriptions that include locker room responsibilities. The descriptions must be on file with the Athletic Director/Principal prior to the start of the season.

20. Be responsible for filling out an accident report for any significant injury, and filing it with the student's health records.

21. In most cases, it is not appropriate for coaches to have their own children accompany the team and be present in the bench area.

22. Have all training rules and regulations on file with the Athletic Director.

23. Distribute written guidelines for earning a letter and keep records for all awards.

24. Develop permission slips, which include the place of travel, terms of travel, telephone number of airline traveling on, and contact telephone number of parent/guardian signing permission slip.

Student/Parent - Coach/Chaperone

Qualifications for student activities:

1. Parent/guardian sign off on Hold Harmless Agreement.

(a) Must attend coach/parent meeting before each sport.

2. Principal's and Superintendent's (or designee's) approval.

3. Chaperone (hereafter includes coach) requirement for overnight:

(a) A chaperone of each gender is required if the travelers are both male and female or if the chaperone is of the opposite gender of the group. (District office may authorize other arrangements.)

Student/Parent (Guardian) Responsibilities

A student participating in an activity must meet the eligibility requirements for:

1. School

2. District rules as follows:

(a) Be properly registered in the school where the student will participate.

(b) Carry a minimum of four classes that lead to granting of credit toward advancement in elementary and graduation in high school.

(c) Be in regular attendance at school.

3. ASAA (if applicable). The above rules apply along with others specifically written for high school participation in ASAA-sanctioned activities. Please reference the ASAA Handbook on-site for more details.

4. Student/Parent (guardian) permission slips must be signed and on file at the school.

Student Travel Policies

Eligibility Requirements for Travel

Student athletes must be in school one full day **before** and **after** any school-sponsored travel. If the student does not comply with these attendance requirements he or she will be ineligible for the next competition. All travelers must follow chaperone decisions and rules at all times (e.g. curfew and schedule decisions).

Clothing for Travel

- Winter boots
- Snow pants
- Winter parka
- Warm hat
- Winter mittens or insulated gloves

Final approval of cold weather gear will be the responsibility of the chaperone and Principal. A trip can be cancelled because of weather at the discretion of the site administrator.

Student Behavior During Travel

- The use and/or possession of alcohol or illegal drugs are prohibited. If it is determined that a student has possessed or used alcohol or illegal drugs, the student will not be allowed to participate in extracurricular activities for a minimum of 45 school days. A second offense will carry a penalty of one semester from the date of infraction.

- Vandalism is unacceptable in airplanes, hotel rooms, schools, etc. Any student who has committed vandalism will be assessed a fee to cover the cost or part of the cost, for restoration of damaged property. Additional disciplinary measure may be imposed after consultation between the site administrator and the District Office.

- Students who violate and/or are convicted of violating Alaska State laws, GCSD Board policy and regulations, school rules, or other rules as specified by the chaperone, will receive penalties appropriate for the action.

- Students shall not be allowed to smoke, chew, or possess tobacco or nicotine products on school property or during school hours, school-sponsored events, or under the supervision of district employees.

- All pop cans, candy, and/or gum wrappers, etc., used during travel and while visiting another site should be properly disposed of.

In the event that any of the rules relative to student travel are violated, the student will be sent home at the student's parent's expense and may be suspended or expelled from school or activities or both, for up to one quarter.

Chaperone Responsibilities

Chaperone Behavior

Chaperones are expected to set an example of proper behavior. In addition, chaperones are expected to supervise and be available to students at all times during travel. Chaperones will either ***remain physically present with students during the entire trip*** or have a buddy system for student safety. Chaperones are expected to enforce all GCSD activity travel procedures and report all violations of rules to the appropriate Principal(s) as soon as possible after a violation.

The use and/or possession of alcohol and/or illegal drugs by chaperones is prohibited. Appropriate disciplinary action may be taken for any infraction.

Travel Documents

The chaperone will keep and assume responsibility for all travel documents for each member of the group and aid the airline (pilot) whenever possible with things such as luggage handling and weight distribution. The chaperone must carry a copy of the parent/guardian permission slip(s) at all times.

Weather Conditions

All rescheduling of travel shall be coordinated through the District office. It is the chaperone's responsibility to notify the site administrator of any changes in travel arrangements.

Student Behavior

Chaperones will explain all rules to students prior to leaving on a trip.

The chaperone has the right to turn a student over to the police or juvenile authorities when, in their judgment, they are unable to control the student or the student presents a danger to others. It is the responsibility of the chaperone to immediately notify the site administrator if the student is having medical problems, being held by the police, or involved in an accident. The site administrator will then immediately notify the parents or guardians.

If, in the judgment of the chaperone, after consultation with the site administrator or District office administrator in the absence of the Principal, it is determined the student should not continue with the group, arrangements will be made for the student to return home. The parent or guardian should be made aware before the trip that additional cost for the return of a student due to unacceptable behavior may be their responsibility. The principals should notify the District office as soon as possible.

It will be the responsibility of the chaperone to determine if a student has violated the substance abuse policy. The decision of the chaperone in these matters shall be final. The site administrator will be notified immediately.

Chaperones will be responsible for knowing the exact whereabouts of students on a trip at all times. If a student leaves the group without authorization and cannot be located immediately or will not return to the group, the chaperone shall contact the site administrator who will make arrangements to send the student home immediately.

Curfew will be set and enforced by chaperones. When staying in hotel rooms with in-room movies, the chaperone shall request nonrated as well as "X" and "R" rated moves to be turned off for all rooms housing students and telephone constraints be initiated.

The chaperone needs to exercise caution in permitting any student to participate in an activity that may be questionable or high risk.

Hold Harmless Agreement

I have read the Galena City School District activity guidelines and understand their contents. I authorize the school to transport my child for any cocurricular activity. I understand that neither the local Board of Education nor the Alaska School Activities Association carries sports or activities insurance and will not assume responsibility for injuries sustained in the cocurricular programs. I also understand that accident insurance coverage is my responsibility. I give consent for emergency treatment to be administered to my child.

I understand that all cocurricular activities have a certain degree of risk. I also understand these risks may include injury ranging from minor sprains and contusions to major injury, possible paralysis, or even death. I understand the possibility of serious injury may impair my future abilities to earn a living; to engage in other business, social and recreational activities, and to enjoy life generally.

Having read and understood the above warning, I recognize the importance of following coaches' instructions regarding playing techniques, training and other team rules, and I agree to obey such instructions.

Having read the above warning and having understood the dangers and potential risks involved in playing or practicing these activities, I give my consent as the parent/legal guardian of _____ (student's name) to participate in the following program(s) (list all sports activities that student intends to play during the current school year):

_____

_____

_____

_____

I understand that since neither the local Board of Education nor the Alaska School Activities Association carries sports activities insurance, I agree to assume all medical costs incurred should injury result from participation in these activities. I hereby agree to hold the Galena City School District, its employees, representatives and coaches harmless from any and all liability, actions, debts, or claims of every kind whatsoever which may arise by or in connection with participation of my child/ward in activities related to the above-mentioned high school programs. The terms hereof shall serve as a release for my heirs, estate, executor, and all members of my family.

_____ Date

_____

Student Signature

_____ Date

_____

Parent/Legal Guardian Signature

ADDITIONAL STANDARDS FOR DEPARTMENT OF DEFENSE (DOD) CONTRACT AIRCRAFT OPERATIONS UNDER FAR PART 135 (NONCOMMUTER) (PASSENGER)

All aircraft must be listed on air carrier's certificate, and flight crews must be trained, qualified, and scheduled in accordance with Federal Aviation Regulation (FAR Part 135) rules. This applies even when the contracted operations fall under FAR Part 91, or other FAR. In addition, air carriers shall comply with the following:

a. Operations:

(1) Pilots are responsible for ensuring correct computing and documenting of the weight and balance for all DOD flights and for assuring that the gross weight and center of gravity do not exceed the aircraft's limitations. Actual or interrogated weights must be used. Completed weight and balance forms from DOD flights will be maintained for a minimum of 30 days.

(2) Companies are required to maintain the last 30 days documentation for all DOD flights to demonstrate compliance with the flight locating requirements of FAR 135.79.

(3) Single-engine aircraft shall be limited to flight during daylight hours and under Visual Flight Rules (VFR) conditions only. Daylight hours are defined as 30 minutes before official sunrise to 30 minutes after official sunset; or in Alaska during extended twilight hours when terrain features can be readily distinguishable for a distance of at least one mile.

(4) All DOD passenger charters will be flown under Instrument Flight Rules (IFR) to the maximum extent possible.

(5) Helicopter Operations Only:

(a) Multi-engine helicopters may be used for night and instrument flight rules (IFR) operations providing the operator's certificate specifies such operations.

(b) US Navy Contracted Shipboard Landings: The pilot shall have completed training that is approved by the Navy and meet subsequent proficiency and currency requirements to ensure standardization with shipboard guidelines.

b. Aircrew Requirements:

(1) A pilot-in-command (PIC) and second-in-command (SIC) will be used:

(a) For all fixed-wing, whole-plane charters, except for flights supporting US Army Corps of Engineers operations-only missions.

(b) If the aircraft certificate requires a two-pilot crew, or has seating configuration for ten or more passengers.

(c) When the aircraft is operated under IFR

(2) PIC and SIC (when required), must have at least 250 hours combined experience in their respective positions in the type of aircraft being operated. Type (as defined in FAR 135.293b) means any one of a group of airplanes as determined by the Federal Aviation Administration, (FAA))to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For helicopters, type (as defined in FAR 135.293b) means a basic make and model.

(a) The PIC's prior SIC time does not count towards the 250-hour requirement.

(b) The PIC must have 1,500 hours total pilot time and have logged 100 hours PIC time in the past 12 months.

(c) The PIC must have at least 10 takeoffs and 10 landings, and 50 hours in the type and model aircraft being operated.

(d) Float plane PICs must have at least 250 total hours in floatplane operations.

(3) The PIC and SIC (when required), shall be IFR qualified; i.e., both shall hold a commercial instrument rating for all DOD flights regardless of the weather or type of flight plan filed. (Not required for operations restricted to VFR only).

(a) Both pilots shall meet the currency requirements of FAR 135.247

(b) The PIC shall have a current FAR 135.297 instrument proficiency check and a current FAR Part 135.293 competency check.

(c) The SIC shall have a current FAR 135.293 competency check to include as a minimum one precision approach, one nonprecision approach, and one missed approach. The SIC must meet the instrument currency requirements of FAR 61.57(c).

(1) If the SIC is assigned to pilot only one type of aircraft for the DOD, that pilot must meet the instrument requirements of this section in that type of aircraft.

(2) If the SIC is assigned to pilot more than one type of aircraft for the DOD, that pilot must meet the instrument requirements of this section in each type of aircraft and the check shall alternate between the different types of aircraft that the pilot operates for the DOD.

c. Aircraft:

(1) Will have two or more engines (except for helicopters, float planes, and aircraft supporting U.S. Army Corps of Engineers operations-only missions).

(a) Meet the IFR performance requirements of FAR 135.181

(b) Be turbine powered if more than nine passengers are carried

(2) Aircraft will also meet the following standards:

(a) Will be maintained in a good state of repair and appearance. Aircraft showing deterioration or neglect such as unrepaired cracks, punctures, loose rivets, missing fasteners, deterioration of interior, paint, or windows are unacceptable for DOD use. These concerns are in addition to airworthiness requirements.

(b) Have on board, a complete set of aeronautical charts, and approach plates (for each required pilot), covering the area of operation.

(c) Have a first-aid kit and emergency equipment, accessible to the passengers and appropriate to the environment of operation.

(d) Have approved life preservers for overwater flights in accordance with FAR Part 91.205b(12), and helicopters will have emergency flotation gear (pop-out) or standard flotation gear (fixed floats).

(3) Aircraft operated single pilot for the DOD will possess the following navigation and communication equipment:

(a) Directional gyro

(b) Artificial horizon

(c) Rate of turn indicator

(d) Vertical speed indicator

(e) One type of FAA-approved navigation equipment such as an automatic direction finder (ADF) receiver system, with ADF indicator; VOR; global positioning system (GPS)/Loran, etc. A GPS shall be available for operations in remote areas where other navigational aids are not available.

(f) One ATC transponder for all Navy shipboard operations.

(g) An emergency locator transmitter (ELT).

(h) At least one Very High Frequency (VHF) receiver and transmitter.

(4) In addition to (3) above, aircraft operated with two pilots for the DOD shall be equipped for IFR operations and possess the following navigation and communication equipment.

(a) Two independent navigation systems suitable for the location served, at least one navigation system will include VOR/DME capability.

(b) Dual VHF receivers and transmitters.

(c) Capability to perform a precision approach other than a ground controlled approach (GCA).

(d) A transponder.

(5) The SIC position (when required to be filled) must include the following operable equipment:

(a) The ability to manipulate all primary and auxiliary flight controls, lift/drag devices, and landing gear.

(b) Airspeed indicator.

(c) Altimeter.

(d) Artificial horizon.

(e) Gyroscopic direction indicator or equivalent.

(f) An independent navigation system.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ALASKA STATE OFFICE
222 W. 7th Avenue, #13
ANCHORAGE, ALASKA 99513-7599

9400 (312) P

November 23, 1999

Instruction Memorandum No. AK 2000-021
Expires: 9/30/2001

To: All Alaska BLM Employees

From: State Director

Subject: Standard Aviation Operations in Alaska

This IM contains basic information on policy, planning, flight following and incident/accident reporting governing standard aviation operations for BLM employees in Alaska. Please keep it readily available for reference during the upcoming field season.

Except for ticketed commercial airline flights, all aircraft will be scheduled through the Alaska Interagency Coordination Center (AICC) at Alaska Fire Service in Fairbanks, or through the Southern Alaska BLM Dispatch Office in Anchorage. AICC and the Southern Alaska BLM Dispatch Office may authorize other offices to schedule directly with local vendors, but it remains their responsibility to ensure that flight-following and other aviation regulations are observed.

All proposed flights requiring Special Use activities (see 351 DM 1.7) must be documented on Form AK 9400-16 and submitted to the Field Manager and the BLM State Aviation Manager for approval; requests for aircraft to be involved in these missions should be submitted to AICC or the Southern Alaska BLM Dispatch Office after these approvals have been obtained.

Any flight request submitted to AICC or the Southern Alaska BLM Dispatch Office will be assumed to have been approved by the appropriate manager; dispatchers will not attempt to confirm the plan with the manager.

Special Use activities include:

Low-level flights (flights conducted at less than 500 feet above the surface)
Helicopter external loads
Direct fire suppression activities (smokejumping, retardant operations, helitack, etc.)
Paracargo
Aerial ignition

All passengers and flight crew members aboard aircraft flying Special Use missions must utilize the appropriate Personal Protective Equipment (PPE) (see 351 DM 1 Aviation Life Support Equipment (ALSE) Handbook), and must have attended Basic Aviation Safety Training (OPM 98-4.5A(1)).

A pre-accident plan and aviation hazard map must be prepared for remote aviation operations (e.g., Cadastral camps, Field Office research projects, AFS field stations); See 352 DM 1.9(C).

ORDERING AIRCRAFT

A preliminary flight plan should be established with the appropriate dispatch office (AICC or the Southern Alaska BLM Dispatch Office) at the time the aircraft is ordered. A preliminary flight plan should include:

A complete flight itinerary, including a description of the routing and an estimated time on the ground for every planned stop
An estimated time of departure
A complete manifest for each leg of the flight, including passengers' names and total cargo weight
Any planned Special Use activities (must have been previously approved by the BLM State Aviation Manager)
A description of the flight-following procedures to be used (see below)
Charge code(s) for each leg of the flight

FLIGHT FOLLOWING

Flight following is a safety and operational requirement of the Department of the Interior; see DOI Manual 352 DM 1.9G, OPM 98.2, and Bureau of Land Management Aviation Manual 9400.45B.

Flight following arrangements must be made clear to AICC or the Southern Alaska BLM Dispatch Office at the time the aircraft order is placed. The five most commonly used methods of flight-following are:

An agency flight plan filed with a BLM dispatch office, with radio check-ins at least once every 30 minutes with a BLM or State of Alaska Division of Forestry (DOF) dispatch office (the air-to-ground frequency for BLM is 127.45; the frequency for DOF is 132.45)

This is BLM Alaska's "default" flight following procedure. Unless other arrangements are made at the time the flight is ordered, dispatch will assume that this is the chosen flight-following method and that the aircraft will be checking in at 30-minute intervals. Dispatch will consider the aircraft to be overdue if more than 40 minutes passes between check-ins, and will act accordingly.

A flight plan filed with a BLM dispatch office, with radio check-ins with BLM or DOF at least once per hour
An IFR flight plan filed with FAA
A VFR flight plan filed with FAA, with radio check-ins with either FAA or an agency dispatch office at least once per hour

BLM aircraft operations conducted under VFR flight plans will require a dispatcher or other qualified person to be on duty until the aircraft operations are concluded unless other arrangements have been identified in advance. For BLM point-to-point flights between two Alaska Fire Service stations, a dispatcher will be on duty at the departure point until the aircraft is en route and communications with the aircraft are handed off to an office en route or to the final destination point. A dispatcher will remain on duty at the destination point until the aircraft has arrived. An agency

dispatcher is not required to be on duty if an IFR plan has been filed with FAA.

In Alaska, many flights occur in remote areas where radio communications are limited or impossible. In these situations, the requirement for 30-minute or 60-minute check-ins may not be realistic. In such a case, alternative flight-following procedures will be implemented, and will be discussed with Dispatch before the flight takes place. The "Flight Following Worksheet" will be filled out and signed by both the Project leader and the Dispatch Coordinator prior to the start of the project or whenever changes in the flight activities warrant a change to previously agreed upon check-in procedures.

Some alternatives that may be used are

Establish a time with dispatch when check-ins will occur
Establish a round-robin (check in-check out) flight plan with Dispatch or FAA
When operating in remote field camp settings, you will establish a flight-following plan which may include check-ins or round-robin plans filed with the base camp. The base camp, however, must have some means of communication with another office or entity within a reasonable amount of time in order to implement and facilitate emergency procedures should they become necessary. When planning a fixed wing support flight to and from a camp it will be imperative that flight following of that aircraft be coordinated with the sending dispatch center. Use of satellite communications will allow the camps to check in with dispatch to acknowledge when the aircraft arrives and departs the camp.

It is critical to understand that Bureau regulations regarding overdue aircraft require specific actions. A radio/communications search will begin when an aircraft is 10 minutes overdue from a scheduled check-in or an arrival time at a particular destination. Once an aircraft is overdue by one hour, a physical search is to begin. The office responsible for the operation of the overdue aircraft will be billed for the costs of the search, including personnel overtime and any aircraft used.

Overtime incurred by dispatchers and fuelers for occasional incidental flight following and fueling of BLM flights will be absorbed by the dispatchers/fuelers respective offices. Dispatcher and fueler overtime for extended BLM projects involving multiple flights and/or overtime hours will be funded by the benefiting BLM office. Overtime incurred for the flight following and fueling of non-BLM agency aircraft will be billed to that agency through the reimbursable process unless other arrangements have been agreed upon in advance.

FLIGHT MANAGERS

A flight manager will be assigned to all flights carrying passengers. The flight manager should be identified by the office using/requesting the aircraft. If a flight manager is not identified, the dispatch office scheduling the flight will request that the ordering office assign an individual as flight manager. If for any reason the ordering office does not assign a flight manager or the assigned manager does not board the aircraft, the dispatch office will identify an individual prior to the flight to perform these duties.

Flight manager duties are as follows

Ensure the aircraft and pilot have current OAS cards
Ensure the pilot performs the preflight passenger briefing
Ensure the aircraft use form (OAS 23) is completed with appropriate cost coding

Ensure that passenger manifest forms or helicopter load calculation forms are completed
Report all accidents and incidents

Ensure that flight plans are on file with an agency dispatch office, that flight following procedures are carried out in accordance with regulations, and that any deviation from standard flight following procedures (i.e. 30 minute check-in) is identified and agreed upon in advance with the dispatch office. Although it is the pilot who is responsible for initiating and terminating the flight plan and for actually performing the check-ins, the flight manager is responsible for ensuring that compliance with required procedures has occurred.

The flight manager is responsible for ensuring that all flight operations conform to FAA, Departmental, and Bureau regulations and policies. Some important rules are:

Only OAS-approved (carded) aircraft and pilots may be used by BLM unless a life-threatening emergency exists
Single-engine aircraft will not be flown under IFR or night conditions
Passengers will not manipulate the flight controls
Pilot flight and duty time limitations (see 351 DM 1.9B(2)) will be enforced
Aircraft will not be refueled while the engine is running or while passengers are on board

INCIDENT/ACCIDENT REPORTING

All aircraft accidents, incidents, mishaps, aviation hazards, or maintenance deficiencies that occur during any BLM flight operation must be reported as soon as possible (see 352 DM 1.10A and 352 DM 6.5) to the BLM State Aviation Manager. All such incidents, mishaps, etc. must be reported on a SAFECOM form (see attached); the completed form should be faxed or mailed to the BLM State Aviation Officer (AK-312), Bureau of Land Management, Alaska Fire Service, P. O. Box 35005, Ft. Wainwright, Alaska 99703. In addition, any accident or incident involving property damage or personal injury must be reported as soon as possible by the quickest possible method.

PASSENGER RIGHTS

It is important to emphasize that every BLM employee has the right to refuse any flight that he or she considers to be unsafe. The Passenger should make any such concerns known to the pilot. If the situation is not remedied, the employee should refuse the flight and report the problem on a SAFECOM form.

Agreement for Flight Following

Flight information

Aircraft User/Flight Manager/Chief of Party _____

Aircraft N# - make and model _____

Type of mission _____

Dispatch office(s) responsible for flight following _____

Date _____

Method of check-in (radio, phone, etc.) _____ ❑

Check-in/reporting times (daily @) _____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

_____ ❑

This document constitutes an exception to required flight following reporting each hour as described in 351 DM 1.4C(b). The signature below signifies an agreement for flight following between the aircraft user and dispatch office. If one of the agreed upon check-in times are missed, an aircraft will be dispatched one hour after said time for search and rescue. The office of the aircraft user will bear the costs of the search and rescue aircraft.

Aircraft User/Flight Manager/Chief of Party _____

Dispatch office responsible for flight-following _____

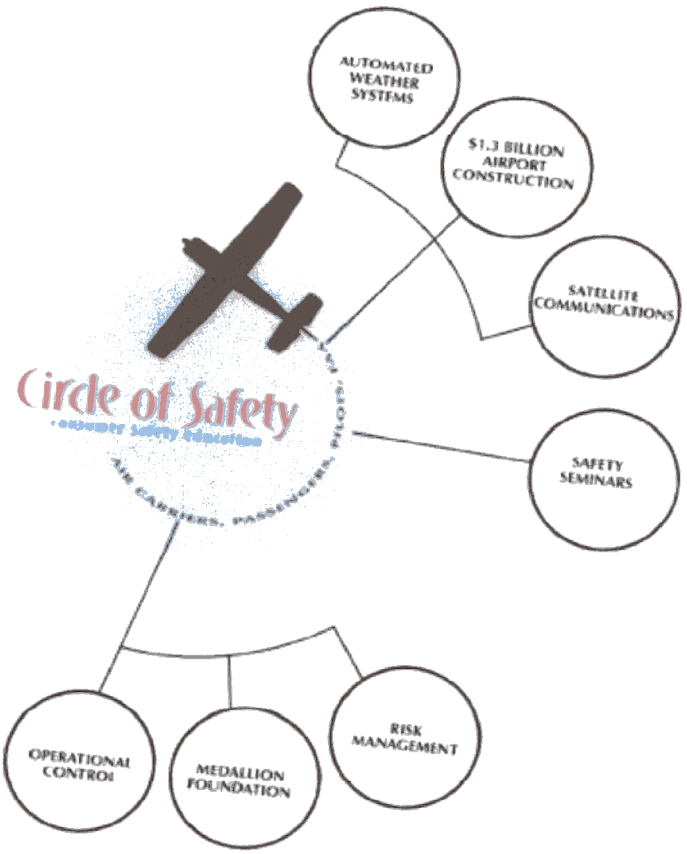
Attachment 2

Forest Service Operator Use

The US Forest Service has a staff of employees in each region that manage the aviation activities for that region. The way they determine the operators they use is as follows.

1. First there is a procurement document obtained (contract or rental agreement) and signed by both parties.
2. The technical staff then checks the records of the operator with the FAA and different organizations.
    - The reputation of the company is checked.
    - The FAA records are checked for accidents and violations.
    - The technical staff will visit the operator and check the facilities to see if it can adequately support the operation.
    - The pilot inspector works with the pilots and if satisfied will issue them a certificate to carry with them. This is redone on an annual basis.
    - The maintenance inspector will work with the mechanics and if satisfied will some times issue them a certificate.
    - The maintenance inspector will also inspect the aircraft and records and if satisfied they will issue an approval certificate that is put in the aircraft. This is redone on an annual basis.
    - Records and a list of all the pilots and aircraft are maintained and the Forest Service Dispatchers have a copy to use when procuring the services of the operator.

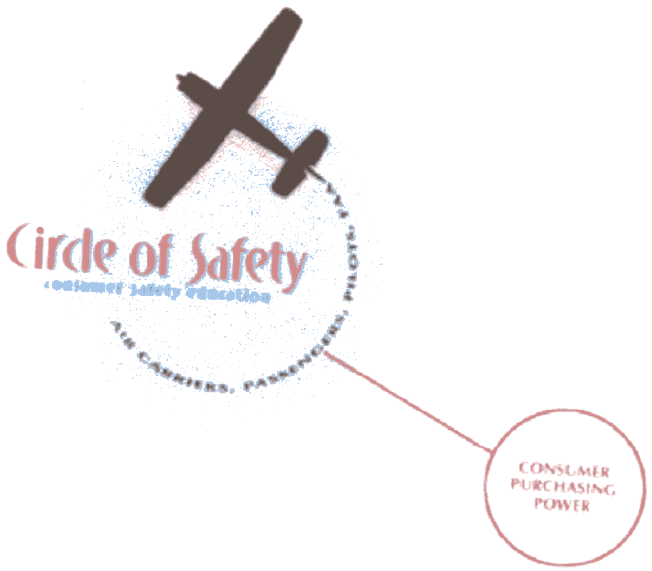
APPENDIX E
CIRCLE OF SAFETY



Safety is like a circle

There are many partners working for aviation safety. Air carriers, the National Weather Service, the State of Alaska and the Federal Aviation Administration have contributed ideas and dollars to improve the aviation system. These efforts have helped reduce the number of commercial aviation accidents over that past twenty years.

This circle needs to be completed.



Consumers can also play a role in reducing accidents by using their purchasing power and learning their rights and responsibilities as passengers. The Circle of Safety acknowledges passengers as important partners in aviation safety.

The FAA is introducing the Circle of Safety to educate and possibly change the attitude of the flying public and the aviation community. By adding passengers to the partnership we hope to reduce accidents and save lives.

APPENDIX F

Follow-up Analysis

of the "Joint Interagency/Industry Study of Alaskan Passenger and Freight Pilots"

Alaska Region, Flight Standards Division, Federal Aviation Administration

Written by Dan Perry AAL-243
November 13, 2001

With technical assistance from:

The Alaska Field Station, Division of Safety Research,
National Institute for Occupational Safety and Health,
Centers for Disease Control and Prevention

Table of Contents

Acknowledgements

This analysis of the interagency survey was written by Alaska Region, Flight Standard Division with assistance from the Alaska Field Station, Division of Safety Research, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.

This analysis was made possible by the efforts of the original Interagency Work Group that conducted the survey and wrote "Joint Interagency/Industry Comparison Study of Alaskan Passenger and Freight Pilots June 1999." They were:

Lawrence L. Bailey, Ph.D., Civil Aeromedical Institute, Federal Aviation Administration

Richard Thompson, Ph.D., Civil Aeromedical Institute, Federal Aviation Administration

Kevin Williams, Civil Aeromedical Institute, Federal Aviation Administration

Jan C. Manwaring, REHS, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health

Timothy F. Thomas, M.D., EIS Officer, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health

Robert E. Pearson, University of Alaska, Anchorage

Gary E. Childers, Alaskan Region, Flight Standards Federal Aviation Administration

Gilbert R. Glover, Fairbanks FSDO, Alaskan Region, Federal Aviation Administration

Patricia D. Mattison, Juneau FSDO, Alaskan Region, Federal Aviation Administration

Executive Summary

A National Transportation Safety Board (NTSB) study in 1995 found that take-off and landing crashes and inadvertent visual flight rules (VFR) flights into instrument meteorological conditions (IMC) were the two major categories of crashes in Alaska. As a result, the Alaska Flight Standards Division, Federal Aviation Administration (FAA) undertook studies of these two categories. This follow-up report and analysis addresses pertinent previous studies and the survey results of the "Joint Interagency/Industry Study of Alaska Passenger and Freight Pilots – 1999," which addressed VFR flight into IMC.

Previous studies have primarily evaluated existing databases and crash reports. It was recognized that not enough information was available on the human factors involved in the Alaska commercial aviation system. Therefore, the FAA conducted a survey of Alaska operators, management personnel, and pilots engaged in commercial passenger or freight operations. Survey questions were developed that pertained to low-visibility controlled flight into terrain (CFIT) crashes.

The survey was originally designed in an effort to show differences among companies who have and have not had CFIT crashes. Using this design, the non-CFIT group would be used as a control group with the CFIT group as the study group. It is important to note that the survey was sent to Alaska operators, management personnel, and pilots. The return rate for the operators and management personnel was insufficient for any analysis. The survey was sent to 3,287 commercial pilots in Alaska and 490

pilots responded. The reader is referred to the original report concerning the differences between the CFIT and non-CFIT pilot groups.

This follow-up report combines all the Alaska commercial pilot categories into an aggregate. The aggregate results reflect the responses of the 490 Alaska pilots; there is no control group for comparison. Although the overall response rate was only 15 percent for the pilots, the results provide some useful insights and hypothesis-generating information for future studies. This report also provides a comprehensive literature review. Many major Alaska aviation safety studies were reviewed for information relevant to this survey and the results are included. This effort has produced a number of potentially meaningful recommendations for Alaska pilots, operators, passengers, and the aviation community to consider.

There are two main issues raised by the results of this survey. The first issue is that the results seem to support previous Alaska aviation studies. In 1980 an NTSB study of Alaska aviation coined the term “Bush Syndrome.” This syndrome describes a predisposition by operators, pilots, and the flying public to accept unwarranted risk. This study made the assertion that the reduction of unwarranted risk by these parties, “is perhaps the single most important factor in terms of its potential contribution to safety, and is probably the most difficult area in which to achieve success.” The acceptance of risk “in response to demands for a reliable air service” was again found to be a major contributing factor in the follow-up 1995 NTSB study of Alaska aviation. The results of this survey indicate support for the NTSB’s reported concerns. See the "Survey Results and Analysis" section for more detail.

The second issue raised is how can such a survey be successfully accomplished? It is obvious that the survey questions and a meaningful response are important and yet the commercial aviation community did not support the survey. A solution to this dilemma must be found. While the aviation infrastructure continues to be improved, it is also vital that the aviation community make every reasonable effort to quantify this unwarranted acceptance of risk, in order to devise and implement corrective measures intended to significantly reduce fatalities.

Definitions

IFR – Operating under FAA's instrument flight rules.

IMC – Instrument meteorological conditions.

VFR – Operating under FAA's visual flight rules.

Commuter – For purposes of this report means operations conducted under the commuter authority of FAR 135.[1]

Air Taxi – For the purposes of this report means operations conducted under the on-demand authority of FAR 135.[2]

FAR 135 – Operating regulations for operating aircraft engaged in commuter and on-demand operations.

FAR 121 – Operating regulations for domestic, flag, and supplemental operations.

FAR 133 – Operating regulations for rotorcraft external-load operations.

FAR 125 – Operating regulations for aircraft having a seating capacity of 20 or more passengers or a maximum payload of capacity of 6000 lbs. or greater, when such aircraft are not required to be operated under other regulations.

Background

To help the readers understand the challenges of operating aircraft in the Alaskan environment and the purpose of this analysis, the following information is provided.

Alaska has approximately 287 public airports and an undetermined number of other off-airport "landing areas" served by approximately 331 scheduled commuter or charter passenger and freight companies. Approximately 66 public airports are equipped to handle IFR arrivals, with the remainder accessible only by flights operating under VFR. Approximately 36 (15%) of the 287 are interconnected to the state highway or rail systems with 12 of the 36 equipped to handle IFR aircraft. These statistics reflect some of the unique physical and demographic features affecting aviation in Alaska. This uniqueness helps form an atmosphere in which pilots face a multitude of difficult decisions each flying day. Weather-reporting observers or equipment do not serve most

[1]When used in a quote from a previous study, reference must be made to the original study for clarification.

VFR destinations. Alaska's large landmass of vast mountain ranges, flat marshy tundra, and extensive coastline result in diverse climatic zones and associated variable and often harsh weather.

Because of this, conditions of poor visibility are common. Summer days are long in the northern latitudes. Aviation companies taking advantage of the extended daylight often assign pilots to lengthy duty periods. A high percentage of trips are flown to airfields which have soft gravel or rutted dirt surfaces. Such landing area requires special knowledge and skills. With large numbers of routes and destinations, a large landmass, many mountains, and fast-changing weather, a high-risk environment is created. In addition, although over half of the Alaskan population lives in one of the state's three major cities (Anchorage, Fairbanks, and Juneau), much of the remaining population lives in remote villages only accessible year-round by aircraft. Commuter and air taxi operators serve as the main link between these villages and regional hubs, transporting people, goods, and mail. In 1994 commuter airlines in Alaska served 238 locations, only 5 of which had road connections to the regional airline hub. (NTSB, 1995) These operations are thus a vital component to the transportation system in Alaska. Compared to the remainder of the United States, Alaska has 76 times as many commuter airline flights per capita. (NTSB, 1995) Alaska has many commuter airlines that primarily use single-engine aircraft in VFR operations, in stark contrast to the remainder of the country.

According to "Alaska CFIT Accidents"[3] between 1990 and 1998 aviation accidents in Alaska caused 100 occupational pilot deaths. This is equivalent to an occupational fatality rate of 430/100,000/year, approximately 86 times the occupational fatality rate for all workers in the United States[4] and nearly five times the national fatality rate for all commercial pilots.[5] Additionally, this is almost 24 times the rate for other Alaskan workers,[6] making flying the highest-risk occupation in Alaska.

---

[2]When used in a quote from a previous study, reference must be made to the original study for clarification.
[3]"Controlled Flight into Terrain Accidents among Commuter and Air Taxi Operators in Alaska," by Timothy K. Thomas, MD, et al, Aviation Space and Environmental Medicine, Nov. 2000.

[4]Overall occupational fatality rate for U.S., 1998 = 5 workers/100,000 workers/yr.

[5]Overall occupational pilot fatality rate for U.S., 1996 = 88/100,000/yr.

[6]Overall occupational fatality rate for Alaska, 1994-1998 = 19/100,000/yr.

An analysis of NTSB data on crashes between 1991 and 1998 showed there was 1303 single aircraft crashes (not mid air collisions) in Alaska. 351 (21%) were commuter and air taxi flights with 884 people on board. Of these 59 (17%) were CFIT. Of the 59 CFIT accidents, 29 were fatal, accounting for 59% of all fatalities.

Only 38 (11%) of 351 accidents involved flying VFR into IMC. However, 17 of these were accidents, accounting for 52 (37%) of all deaths and 16 (31%) of pilot deaths.

The high occupational pilot fatality rate in Alaska and the high fatality rate associated with CFIT crashes reinforce the importance of addressing this type of crash and examining the associated risk factors. Understanding all the factors that result in a pilot flying a properly functioning aircraft into terrain could help in the design of appropriate interventions at multiple levels within aviation and ultimately result in the reduction of commercial aviation fatalities.

Prompted by the severity of this problem within the state and the FAA goal to reduce commercial aviation fatal accident rate by 80 percent by 2007, the Alaskan Region Flight Standards Division of FAA, with assistance from the Civil Air Medical Institute, the University of Alaska, Anchorage, and the Alaska Field Station of the National Institute for Occupational Safety and Health, conducted a survey of Alaska pilots.

Methods

Original Survey and Analysis Methods[7]

As part of an overall effort to reduce the number of fatal aircraft crashes in the state of Alaska, FAA Flight Standards Alaskan Region formed a working group in August 1998. This group was formed to study and compare procedures and behaviors of management and employees of Alaskan passenger or freight companies. The joint industry/interagency task began with an analysis of the NTSB aircraft crash database for the period January 1, 1992, to September 10, 1998. This review resulted in the identification of Alaskan companies whose aircraft were involved in crashes where

[7]The following is extracted from the original survey report to give the reader a general understanding of how the survey was conducted. For more specific details the reader is referred to that report.

NTSB investigators reported VFR flights inadvertently entering IMC as a contributing factor in the crash, herein referred to as "CFIT companies."

In order to examine potential differences between CFIT and non-CFIT companies, the working group developed a method, which attempted to compare field practices, policies and procedures used by company managers and pilots. Identification of high-risk practices, policies, procedures, and behaviors would allow carrier management and FAA inspectors an opportunity to recognize potential problem areas and take corrective action before crashes occur. The method adopted involved developing and sending a survey to company managers and pilots who had worked for or were currently working for at least one commercial freight or passenger aviation company operating in Alaska. The population of interest in this study was Alaskan passenger and freight companies and pilots who: (1) operated under Part 135, 133, 125 and/or 121 Federal Aviation Regulations (FARs); (2) were not military or government pilots; and (3) flew for a company that had a CFIT crash within the past five years or a company that had not had a CFIT crash within the past five years. Crash data available from the NTSB for the period January 1, 1992, and September 10, 1998, was used to identify CFIT and non-CFIT companies. To ensure the viability of the survey instrument, a beta test was conducted using a cross-section of Alaska managers and pilots. The resulting feedback was used to make adjustments in survey content.

Based on the NTSB data, 29 companies were identified as CFIT companies and 302 companies were identified as non-CFIT companies (331 total). Surveys were sent to all 331 companies. Managers, directors of operations, directors of maintenance, chief pilots, and pilots were asked to respond.

Data from the Civil Aviation Registry (the Registry), and the Civil Aeromedical Institute (CAMI) were used to precode eligible pilot participants who chose to provide an employment history at the time of their last aviation medical exam into one of the two groups. Based on the precoding, 186 pilots were identified as working for CFIT companies and 680 pilots were identified as working for non-CFIT companies. Employment histories were not available for 2,371 potentially eligible pilot participants who had flown commercially within the past five years. These individuals were precoded into an "other" category. Thus, the total pilot population for this study was 3,237.

Of the 3,237 surveys mailed, only 490 pilot surveys were returned, for an overall response rate of 15 percent. Response rates for the three pre-coded categories include: (1) CFIT company pilots, 37 out of 186 returned surveys, a 20 percent response rate; (2) non-CFIT company pilots, 134 out of 680 returned surveys for a 20 percent response rate; and (3) "other" pilots, 320 out of 2,371 surveys returned for a 13 percent response rate. Although low, this return rate was similar to, or better than, that obtained for other similar surveys in the Alaskan region. (Driskill, Wiessmuller, Quebe, Hand, & Hunter, 1997; Joseph, Jahns, Nendick, & St. George, 1999; Rakovan, Wiggins, Jensen, & Hunter, 1999)

There was insufficient response from the companies and management personnel to support any analysis.

Survey response data was entered into a statistical program (SPSS). Data entry problems were minimized through the use of electronically scanned survey responses. The software used requires a user to re-enter any unrecognizable response. In addition, quality control spot checks were run on 10 percent of the entered data.

Surveys from other journal articles were examined to find scales that had empirical evidence of validity. These scales were then modified to fit the purpose of the Alaska survey and then were further checked for internal consistency.

The original report concludes that, although the survey results may not completely generalize to the CFIT Company population, the data collected appears to reflect candid responses. Thus, the results provide a useful baseline assessment of safety-related attitudes and practices associated with CFIT accidents.

Follow-up Report Methods

Even though the overall response rate was low, 490 professional pilots provided useful information concerning safety-related attitudes and practices associated with CFIT crashes in Alaska. The following method was used for analysis. As shown in appendix A & B, the pilot groups (CFIT and non-CFIT company pilots) were combined into one group to facilitate the evaluation of the characteristics of all the respondents. Appendix A contains the combined results from the survey questions. The responses to questions 1 through 58 were dichotomized into agree or disagree categories. Appendix B contains the scales as provided in the report by the original work group but the responses were all

dichotomized into agree and disagree categories. The results were then tested for statistical significance and evaluated.

Literature Review of Relevant Previous Studies

"NTSB Special Study of Air Taxi Safety in Alaska," September 16, 1980:

This NTSB study of Alaska aviation found that one of the main contributing factors to the high air taxi crash rate in Alaska is the "bush syndrome": "…an attitude of air taxi operators, pilots, and passengers in Alaska that ranges from a casual acceptance of risks to a willingness to take unwarranted risks." The NTSB held that the "elimination of the bush syndrome exhibited by pilots, operators, and passengers must accompany the improvements in airway and airfield facilities. This is perhaps the single most important factor in terms of its potential contribution to safety, and is probably the most difficult area in which to achieve success."

"Definition of Alaskan Aviation Training Requirements," by American Airlines Training Corporation, July 1982:

This study used a critical incident methodology for identifying pilot and management training needs. To this end, 177 pilots and operators were interviewed in 54 locations throughout Alaska. Anonymity was guaranteed.

This study reported that 63 (36%) of the pilots interviewed reported feeling pressure to accept flights in marginal weather conditions. Sixty-five (37%) of the pilots interviewed reported that the training required by federal regulations was not adequate. One hundred (56%) of the pilots interviewed reported that some pilots they knew violated the maximum eight flight hours per day rule.

The research team found that the bush syndrome was more prevalent in some companies. The report addressed the question of what factors were different among companies with high crash rates when compared to companies with lower crash rates. The three management factors identified were operational control, accounting procedures, and personnel practices. The report concluded that it is possible for an air taxi operator to fly safely in Alaska and recommended the development of training for both management and pilots. It also recommended the creation of a voluntary

certification program, which would recognize those operators who conduct business at a standard well above the minimum federal requirement.

"Aviation Safety in Alaska," by the NTSB, November 1995:

In 1995 the NTSB found that "pilots and operators in Alaska continue to conduct flights with higher than normal risks, in response to demands for reliable air service in an operating environment and aviation infrastructure that are often inconsistent with these demands." Over half (54%) of the fatal commuter and air taxi crashes in Alaska between 1989 and 1993 were a result of flying VFR into IMC.

The report also found that aviation operations in Alaska generally have experienced a greater rate of crashes involving VFR flight into IMC compared to other parts of the country. When comparing crash data from the five-year period (1989-93) there were "substantially greater rates in Alaska among commuter airlines, air taxis, and general aviation, compared to similar States that also have sparse populations and diverse terrain characteristics. In 1993 Alaska's crash rate for VFR flight into IMC was eight times the rate of Washington, five times that of Colorado, and four times that of Oregon."

In a survey of 44 commercial pilots, conducted as part of the 1995 NTSB Study, 22 (50%) respondents stated that in response to operational pressures, they had flown in IMC on a VFR flight.

"An Analysis of CFIT Accidents of Commercial Operators" by the Flight Safety Foundation, April-May 1996:

This study was a global industry effort led by the Netherlands National Aerospace Laboratory in conjunction with the Flight Safety Foundation. The study period included CFIT crashes from 1988 through 1994. The study included 156 CFIT commercial operator crashes, 14 of which occurred in Alaska. This report concluded that 30 of these crashes involved inadvertent VFR flight into IMC. Also, 107 crashes involved IMC and in 87 percent of these crashes the weather status was known. About one-half of the crashes occurred in conditions of darkness. One of this study's conclusions maintained that risk reduction efforts must include regional carriers and air taxi operators.

Survey Results and Analysis

As previously mentioned, the overall response rate was 15 percent for the pilots. The low response rate prevents an analysis that provides firm conclusions. Most company managers chose not to participate in the survey. The fact that the industry objected to the FAA survey may have contributed to the lack of response. It is possible that any survey from a regulatory branch of government would experience such suspicion and resistance.

The original report grouped some survey questions with other similar questions. These groups are referred to as scales and can be referenced in Appendix B. When pilot responses were combined, three of these scales seemed to provide the most insight into areas critical in poor visibility related CFIT accidents.

The "Weather Pressure Scales" suggest that many pilots in Alaska might feel pressure to "push the weather" i.e., proceed into marginal visual conditions. This pressure and the resultant acceptance of the risks has been discussed in a number of important studies: NTSB studies of Alaska Aviation 1980 and 1995; "Definition of Alaskan Aviation Training Requirements," by American Airlines Training Corporation, July 1982; and "An Analysis of CFIT Accidents of Commercial Operators," by the Flight Safety Foundation, April-May 1996. Even though 75 percent reported being encouraged to turn around in poor weather, the other responses in the scale indicate a significant lack of specific processes and procedures to cope with the consistently poor weather conditions in many Alaska regions. In addition to pilots feeling pressure to operate in poor weather, the results of the following questions in appendix A indicate tacit acceptance of these risks by some operators.

- Although 75 percent of the respondents reported being encouraged to turn around if weather deteriorated enroute, 25 percent were not encouraged to do so. (Question 24, refer to the discussion section for more dialogue on this result.)
- Forty-four percent of the respondents reported their company did not have an inadvertent IMC recovery procedure. (Question 83)
- Forty-one percent of the respondents reported that their companies did not provide training on how to operate in low visibility. (Question 28)
- Forty-five percent of the respondents reported that their decision to turn around due to deteriorating weather might be questioned by the company. (Question 23)

The "Organizational Safety Climate Scale" suggests some confidence in the company's attitude toward the safety of the pilot, with 76 percent reporting that they believed the company was doing all it could to prevent crashes. (Question 15) However, the following responses to other questions may indicate that some companies can do significantly more to manage risks during poor weather operations:

- Seventy-one percent of the respondents reported their company might not be providing awards to promote safe flying. (Question 26)
- Seventy percent of the respondents reported that there are times when they have to fly even when ill. (Question 48)
- Ninety-one percent of the respondents reported that there are times when they have to fly even when tired. (Question 47)
- Fifty-seven percent reported the operator did not ensure proper physical fitness prior to each flight. (E.g., free from the adverse effects of fatigue, medications, Question 34)
- Sixty percent of the respondents reported the operator did not ensure the pilot had the right frame of mind for flying. (Question 33)

The "Impact of FARs on Business" scale, suggests a large disparity between the requirements of federal regulations and how operations are actually conducted:

- Question 6 indicates that 62 percent of these pilots believe they cannot do their jobs and comply with all of the regulations.
- Question 7 indicates that 73 percent believe that exemptions to federal regulation are necessary so that the rules conform to the reality of Alaska flying.

The survey covers many areas of importance and not all of them are addressed in this analysis. The reader is encouraged to read the combined survey results in Appendix A and appendix B.

Discussion

Over the years, many millions of dollars have been spent to improve the aviation infrastructure in Alaska, i.e., airport improvements and navigation and communication equipment. However, as was pointed out in the NTSB study in 1980, improvements in infrastructure alone will probably not solve all the aviation safety problems that face Alaska.

Previous studies and the results of this survey suggest that unwarranted risk-taking persists as a problem among Alaska's commercial aviation operations. The consequences of this risk-taking are reflected in the fatal crashes related to VFR flight into IMC. The incidence of inadvertent VFR into IMC crashes in Alaska as well as these survey results suggest the possibility that inadvertent and intentional operations of VFR flights into IMC are accepted and are not unusual. One example of this is the results of Question 24, which indicate that as much as 25 percent of the respondents are not encouraged to turn around in deteriorating weather. Crashes due to proceeding into poor weather conditions while trying to maintain visual flight are so often catastrophic that there is no plausible argument for anyone not turning around under such conditions.

Most CFIT crashes are attributed to "pilot error," wherein the pilot intentionally or inadvertently flies the aircraft into IMC. However, attributing "pilot error" as the cause of an aircraft crash does not fully explain a "lapse in judgement or deterioration in performance by experienced, competent pilots." (Simmel, 1989) CFIT crashes may not be caused by single agents but may be the result of failures within the system, and are often related to human factors. These include organizational factors, unsafe supervision, preconditions for unsafe acts and finally the unsafe acts themselves. (Reason, 1990) These crashes occur when failures occur at all levels, and backup safeguards are inadequate, resulting in the pilot flying the aircraft into a situation in which he is not aware of his surroundings. The literature review indicates the need for companies and pilots to take measures to improve risk management. As indicated in the literature review section, attitudes and practices concerning risk management have long been identified as major contributing factors in Alaska's aviation crashes. For example, the 1982 study by American Airlines Training Corporation found knowledge deficiencies in specific areas for both pilots and management.

Ever since the "Bush Syndrome" was coined, its existence has not been quantified. The meaning of the term has gradually changed and has now become synonymous with "Bush Pilot Syndrome." This has led many to the impression that pilots alone are responsible for the syndrome. The NTSB defined the original term to include pilots, operators, and the flying public. This survey was intended to give insight into underlying management and pilot attitudes on critical safety issues. It must be noted that, with the exception of some discussion in the American Airlines study, the literature

review did not reveal similar data concerning the safety attitudes of management and the flying public.

Because of these unanswered concerns, an interagency aviation safety initiative has been established. The Alaska Interagency Aviation Safety Initiative is a three-year interagency initiative involving the Federal Aviation Administration, the National Transportation Safety Board, the National Weather Service, and the National Institute for Occupational Safety and Health. The initiative involves five elements:

1. Gathering and analyzing data
2. Bringing together work groups
3. Working to develop communication and education tools
4. Evaluating the effectiveness of flight safety practices
5. Evaluating progress, and suggesting additional improvements

Recommendations

1. Operators in Alaska should develop and implement a risk management program, especially in critical areas such as hazardous weather operations. These risk management programs should consider sources of stress for pilots such as illness, fatigue, boredom, customer demands and tight schedules. They should evaluate the effectiveness of company procedures for evaluating in-flight visibility and inadvertent IMC recovery procedures.

2. Operators in Alaska should consider implementing the intervention strategies previously recommended in the American Airlines study involving operational control, personnel practices, and accounting.

3. Alaska operators should develop and implement a voluntary program that rewards participant operators for attaining a higher aviation industry standard. This recommendation was also taken from the American Airlines study.

4. The Alaska aviation industry must continue, with everyone's full participation, to study the attitudes of all the stakeholders to determine the root causes of any

acceptance of unwarranted risk. Pilots and operators should validate for themselves the survey results in appendix A and B.

5. The safety attitudes of operators and passengers should be evaluated and interventions planned as appropriate.

6. The FAA should consider some means of gathering information from the industry other than by FAA generated mail-in surveys.

The implementation of the recommendations should result in a safer flying environment among air carriers; thereby reducing aircraft crashes in Alaska.

References

Driskill, W.E., Weissmuller, J.J., Quebe, J.C., Hand, D.K., & Hunter, D. (1997). The use of weather information in aeronautical decision-making: II. U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Medicine, Washington, D.C. Report # DOT/FAA/AM-97/23. NTIS # ADA340406.

Joseph, K.M., Jahns, D.W., Nendick, M.D., & St. George, R. (1999). A usability survey of GPS avionics equipment: Some preliminary findings. U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Medicine, Washington, D.C. Report # DOT/FAA/AM-99/9. NTIS # ADA362193INZ.

Rakovan, L., Wiggins, M.W., Jensen, R.S., & Hunter, D.R. (1999). A survey of pilots on the dissemination of safety information. U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Medicine, Washington, D.C. Report # DOT/FAA/AM-99/7. NTIS # ADA361233INZ.

National Transportation Safety Board. NTSB Special Study of Air Taxi Safety in Alaska. NTSB-AAS-80-3 Safety Study. September 16, 1980. Washington, D.C.

American Airlines Training Corporation. Definition of Alaskan Aviation Training Requirements. July 1982.

National Transportation Safety Board. Aviation Safety in Alaska. NTSB/SS-95/03 Safety Study. November 1995. Washington, D.C.

Flight Safety Foundation. An Analysis of Controlled-Flight-Into-Terrain (CFIT) Accidents of Commercial Operators 1988 through 1994. Vol. 15 No. 4/5. April-May 1996.

Garrett L.C, Conway G.A., Manwaring, J.C. Epidemiology of Work-Related Aviation Fatalities in Alaska, 1990-94. Aviation, Space, and Environmental Medicine, Volume 69, Number 12, December 1998.

APPENDIX G
FEDERAL REGULATIONS

§ 135.205 VFR: Visibility requirements.

(a) No person may operate an airplane under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet unless flight visibility is at least 2 miles.

(b) No person may operate a helicopter under VFR in Class G airspace at an altitude of 1,200 feet or less above the surface or within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport unless the visibility is at least --

(1) During the day -- 1/2 mile; or

(2) At night -- 1 mile.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135-41, 56 FR 65663, Dec. 17, 1991

§ 135.203 VFR: Minimum altitudes.

Except when necessary for takeoff and landing, no person may operate under VFR --

(a) An airplane --

(1) During the day, below 500 feet above the surface or less than 500 feet horizontally from any obstacle; or

(2) At night, at an altitude less than 1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown or, in designated mountainous terrain, less than 2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown; or

(b) A helicopter over a congested area at an altitude less than 300 feet above the surface.